

Bi-weekly Wetland and Stream Corridor Restoration Update

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Welcome to the Bi-weekly Wetland and Stream Corridor Restoration Update. This Web site

- Provides current information on wetland and river corridor restoration projects
- Recognizes outstanding restoration projects
- Offers a forum for information sharing

We welcome the submission of articles and announcements related to your restoration project. Just send your write-up to EPA's contractor at restorationupdate@tetratech-ffx.com or mail it to Rebecca Schmidt, Bi-weekly Restoration Update Coordinator, Tetra Tech, Inc., 10306 Eaton Place, Suite 340, Fairfax, VA 22030. We will carefully consider your submission for inclusion in a future update. If your submission is selected, please note that it might be edited for length or style before being posted. Because this Web site is meant to be a public forum on restoration information, we cannot post any information that is copyrighted or information that advocates or lobbies for any political, business, or commercial purposes or has the appearance of doing so.

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Feature Article

Restoring Habitat at Great Island

This story was adapted from an article that appeared in the September/October 2002 issue of Connecticut Wildlife (<http://dep.state.ct.us/burnatr/wildlife/geninfo/cw.htm>).

This past June, work was completed on a 3-year project to restore degraded coastal wetlands at the state-owned Roger Tory Peterson Wildlife Area at Great Island, in Old Lyme, Connecticut. Well-known to waterfowlers and birders, this 588-acre tidal marsh, located at the mouth of the Connecticut River, provides habitat for a wide variety of wildlife, especially birds. Unfortunately, the ecological value of the Peterson Wildlife Area and the area's use by wildlife had been greatly diminished as a result of grid ditching and the encroachment of the invasive plant phragmites.

Virtually all of Connecticut's coastal marshes were "ditched" in the 1930s. That is, ditches were cut into the surface of the marshes in a grid pattern to drain off water and remove mosquito breeding areas. Unfortunately, this process removed the open water habitats most attractive to wildlife, especially waterfowl. Grid ditching also resulted in decreased soil salinity, thus enabling the salt-intolerant plant, phragmites, to become better established and eventually displace native plants, reducing wildlife diversity.

Project Partners

To help remedy this problem, the Wildlife Division of the Connecticut Department of Environmental Protection applied for funds through the North American Wetland Conservation Act (NAWCA) grant program and received a \$218,000 grant. This program is administered through the U.S. Fish and Wildlife Service (USFWS) and provides funds for wetland protection, restoration, and enhancement. NAWCA grant funds must be matched by contributions from project "partners." Partners for the Roger Tory Peterson Wildlife Area restoration included the USFWS, Ducks Unlimited, Valley Shore Waterfowlers, The Nature Conservancy, Connecticut Waterfowl Association, and the Northeast Utilities' Foundation. Supporters of Connecticut's Duck Stamp Program—that is, the citizens who have purchased state Duck Stamps—provided the greatest portion of the matching funds. The Duck Stamp funds purchased a specialized amphibious mulching machine used to complete much of the wetland restoration work. This

public/private partnership helped restore tidal wetlands essential to Connecticut's migratory and nesting shorebirds, finfish, and native plant species.

Achieving Project Goals

The goal of the Peterson Wildlife Area project was to restore 300 acres of degraded marsh habitat to a mixture of brackish meadows interspersed with shallow, open water areas, a condition that approximates the preditched marsh environment. The restoration also involved the elimination of 200 acres of phragmites by plugging and filling ditches to restore the natural tidal flow of saltwater into the marsh. A 180-acre site at the Peterson Wildlife Area now has 30 new ponds with pannes (shallow depressions) and plugged grid ditches. Native plants and grasses have been able to return to the area, benefitting wildlife.

Restoration work at the Peterson Wildlife Area was conducted by the Wildlife Division's Wetland Habitat and Mosquito Management (WHAMM) Program, with assistance from the USFWS McKinney National Wildlife Refuge. The WHAMM Program, established in 1994, was one of the first wetland habitat restoration programs in the country with dedicated staff and specialized, low-ground pressure equipment used exclusively in restoration activities.

What's Next?

Once they had completed the wetland restoration project, staff from the WHAMM Program began monitoring birds, vegetation, and water quality at the site. The WHAMM Program, in cooperation with the Department of Environmental Protection Office of Long Island Sound Programs technical staff and Scott Warren of Connecticut College, will continue monitoring the site during 2003. Data collected during the monitoring period will be helpful to the WHAMM Program as it undertakes other proposed projects along the Connecticut River estuary.

Since the completion of the habitat restoration project at the Peterson Wildlife Area, a number of brackish plant species have been reestablished, such as cattail, bulrush, tearthumb, water hemp, and marsh mallow. Several bird species have also been returning to the wetland including black ducks, mallards, green-winged teal, egrets, and rails. Other wildlife that has been observed include muskrats, meadow voles, and deer. Information for this article can be found at the Web site <http://dep.state.ct.us/burnatr/wildlife/special/greatis.htm>.

If you'd like your project to appear as our next featured article, e-mail a short description to restorationupdate@tetrattech-ffx.com.

Five-Star Restoration Projects Update

The goal of EPA's Five-Star Restoration Program is to bring together citizen groups, corporations, youth conservation corps, students, landowners, and government agencies to undertake projects that restore streambanks and wetlands. The program provides challenge grants, technical support, and peer

information exchange to enable community-based restoration projects. A few Five-Star Restoration projects are being revisited to see if the modest amount of funding (between \$5,000 and \$20,000) has helped the local restoration partners achieve their goals.

Project Title: Nooksack Basin Restoration
Five-Star Grant: \$10,000
Grant to: Nooksack Salmon Enhancement Association
Location: Bellingham, Washington
Grant Year: 1999

Original Project Description:

The Nooksack Salmon Enhancement Association (NSEA), the Nooksack Tribe, a local land trust, a local high school and elementary school, private landowners and community volunteers will join efforts to implement a variety of riparian restoration projects to improve salmon habitat in the Nooksack Basin. The projects are designed to promote sustainable stewardship practices, provide tribal staff training on restoration techniques, and educate local youth about natural resource issues. The National Marine Fisheries Service Community-based Restoration Program is providing partial funding for this grant.

Project Update:

The work completed on several restoration projects is discussed by tasks.

Task 1: Project partners completed riparian restoration along 1,000 feet of the South Fork Nooksack River on the River Farm of the Evergreen Land Trust. The restoration work included invasive species control, plantings, and maintenance of native plants. This effort was supported by an NSEA crew, a crew of Washington Conservation Corps members, residents of River Farm, and Land Trust members. Evergreen Land Trust residents who live on and manage the River Farm shared their restoration project with the community on two “salmon tours.” A resident of Evergreen Land Trust has also developed and implemented a water quality monitoring program for this reach of the river.

Residents of the River Farm, Lummi Natural Resources, and NSEA will continue to work on site restoration of this 80 acres of land. Other restoration projects have since been identified in this area.

Task 2: The project team coordinated the implementation of a smolt trap at the outlet of Peat Bog Pond to determine priority for restoration work on this tributary. This project allowed a high school natural resources class to do a successful real-world, hands-on project using data collection and monitoring. NSEA staff and a Washington Department of Fish and Wildlife biologist will analyze the data collected and prioritize salmon restoration projects on this stream.

Task 3: The project team restored a riparian site on the Middle Fork Nooksack River. NSEA and the Lummi Nation crews planted a 26-acre restoration site owned by the Whatcom Land Trust. Part of the work involved re-establishment of conifers. Conifers were planted to raise the number of trees per acre to 200. This site will be monitored and maintained, and the success native plants will be recorded for 3 to 5 years. Also under this task, NSEA, Nooksack and Lummi Tribal staff joined to conduct riparian restoration methods and vegetation monitoring training workshops.

Data collected related to all tasks show the efforts to be very successful. The data show high plant survival rates. The high school class is now raising steelhead (native brook stock) and continues to be involved in ongoing salmonid recovery projects. Restoration work on the Peat Bog Pond tributary has been prioritized for the ongoing efforts in the Nooksack basin. **[Updated May 2002.]**

Project Title: Banking on the Future
Five-Star Grant: \$10,000
Grant to: Oak Park Middle School
Location: Decatur, Alabama
Grant Year: 1999

Original Project Description:

“Banking on the Future” is a riparian stabilization and restoration project conceived, researched, and planned by students involved in the field studies program at Oak Park Middle School in Decatur, Alabama. The implementation of this project will involve the stabilization and revegetation of approximately 3 miles along Flint Creek and the Tennessee River. This project will not only protect and restore valuable fish and wildlife habitat, but will also improve and save a community nature trail that is used by more than 20,000 residents annually.

Project Update:

Students from Oak Park Middle School in Decatur, Alabama are partnering with the city of Decatur’s Public Works Department, the Tennessee Valley Authority, and others to stabilize and restore streambanks along Flint Creek and the Tennessee River. To date the partners have restored approximately 3,000 feet (almost two-thirds of a mile) and are well on their way to achieving their original goal of three miles. The “Banking on the Future” project is not only protecting and restoring valuable fish and wildlife habitat, but is also improving and saving a community nature trail that is used by more than 20,000 residents annually. **[Updated June 2002.]**

For more information on EPA’s Five-Star grant program, visit www.epa.gov/owow/wetlands/restore/5star.

Community-Based Restoration Partnerships

Students Stabilize the Chippewa

In March 2002, students from three high schools participated in a streambank stabilization project on Minnesota’s Chippewa River. Students employed three bio-engineering techniques to help control erosion. Each technique applied live willows to the streambank in specific ways to allow them to sprout and grow. The willows’ roots will grow into the bank, helping to hold the soil in place.

Each high school team learned about a technique prior to the planting day so they could teach it to the other student volunteers. One group used a technique called willow waddling, in which they wove dormant willows into large "mattresses" and placed them on the streambank. Willow waddles work because "everywhere there is a bud in contact with the soil there is potential for it to grow into a new plant," explains University of Minnesota Extension Educator, Amy Rager, the project coordinator.

Another group used fascines on the slope. Fascines are bundles of willows that are tied with hemp rope and layered into small trenches. By incorporating three trenches at varying heights along the bank, the students ensured that vegetation would eventually achieve maximum coverage of streambank.

The final group of students used live staking. This fastdf technique is simply the act of cutting pieces of live willow and sticking the pieces into the ground with at least one bud exposed above the soil. Buds below the soil will become the first new roots, while the buds above become branches.

The students used wooden and willow stakes to secure the different types of willow stabilization techniques. They then placed topsoil as appropriate over the restored area, spread a mixture of cool season grasses over the top, and mulched the entire area with straw. Finally they covered the entire length with biodegradable netting.

The project was funded by the University of Minnesota Extension Service, Minnesota Department of Natural Resources, the College of Architecture and Landscape Design, and Swift County. For more information, see www.extension.umn.edu/water/shore/chippewa.htm.

Hylebos Stream Team Gets Help from EarthCorps

In Spring 2002, the Hylebos Stream Team received some much needed restoration help from a crew from EarthCorps, a nonprofit organization that supervises and trains youth as they complete environmental restoration projects. The EarthCorps team helped clear almost 25,000 square feet of blackberry from the banks of Washington's Hylebos Creek. Shortly thereafter, the Stream Team placed cardboard and landscape fabric at the newly-cleared site, hoping to discourage future growth of the blackberry. The Stream Team planted native conifers along the stream to enhance streamside forest cover. The Stream Team then covered the cleared and planted areas with mulch to improve aesthetics, assist with the composting of material, and prepare the site for future plantings.

The Hylebos Stream Team is a part of the Friends of the Hylebos Wetlands, a nonprofit organization formed to support the preservation of the West Hylebos Wetlands State Park and the Hylebos Creek watershed in Washington. The Stream Team was started in February 2000 to educate the community about their local salmon stream and involve volunteers in hands-on efforts to restore the Hylebos Creek salmon habitat. Since its inception, the Stream Team has involved more than 350 community members in volunteer programs and has reached tens of thousands of local residents through a public outreach program. To date, the Stream Team has held six habitat restoration projects involving over 200 volunteers in planting almost 2,500 native trees and shrubs along 2,400 feet of the creek.

For more information about the Stream Team/EarthCorps restoration project, see the Spring 2002 issue of the Mill Creek Voice, available at www.hylebos.org/News/highlights/Spring02.pdf, or contact Carla Milesi, Stream Team Coordinator, at Carla@hylebos.org. For more information about the Friends of Hylebos Wetlands, see www.hylebos.org, or call 253-929-1519.

If you are part of an innovative community-based partnership that is working to restore river corridors or wetlands, we'd like to hear from you. Please send a short description of your partnership to restorationupdate@tetrattech-ffx.com.

Achieving Restoration Results

Restoring the Drakes Creek Ecosystem

The Nashville District of the U.S. Army Corps of Engineers is working with the City of Hendersonville, Tennessee to restore Drakes Creek. Drakes Creek is a major tributary embayment of the Old Hickory Reservoir on the Cumberland River in north central Tennessee. When the Old Hickory Dam was closed in 1954 the upper end of the Drakes Creek embayment began to fill with sediment. By the early 1990s, exposed mud flats had become apparent.

Two separate projects have been initiated at the Drakes Creek site to restore the ecosystem. The project is being completed in two phases. During Phase 1, the project team dredged to create a 13-acre lagoon, built a dike and a seawall, removed waterfowl, and restored the aquatic environment. The lagoon was dredged, creating areas up to 6 feet deep, and was planted with a variety of aquatic plants and is developing well. The dike, which was constructed from geotubes, has been planted with a variety of native trees, wildflowers, and grasses.

What is a Geotube? Geotubes are made of a combination of polyester and polypropylene. Dredged sediments are pumped into the geotubes, where they trap the solid materials and allow water to drain through the weave of the fabric. Plants can be sprigged through the material where they grow and eventually present the appearance of long low islands or natural riverbank. The standard size of a geotube is 200 feet long and 45 feet in circumference. The geotubes provide a good alternative to traditional dikes made from piled rock and can be much less expensive than rock dikes.

Phase 1 construction began in February 2000 and was completed during the summer of 2001. The total project cost (Phase 1 only) was \$1,500,000. The federal cost was \$1,125,000 and the city's cost was \$375,000. Results are already apparent. The water quality in the lagoon is greatly improved and game fish such as bass and bream have returned to and are spawning in the area.

In Phase 2, currently under way, the project team will dredge a channel up to 8 feet deep and 4,500 feet long to restore the fish migration passage between the stream and lake portions of Drakes Creek. They will also restore wetlands to create additional fish structure and habitat. By the time it is complete, the

Drakes Creek project will have created a fringe of native riparian vegetation together with successive zones of emergent and submergent aquatic vegetation.

Phase 2 construction began in June 2002 and is scheduled to be completed by October 2003. The estimated project cost (Phase 2 only) is \$5,200,000 (\$3,900,000 federal and \$1,300,000 city cost).

Once the project is completed, the city of Hendersonville will be responsible for operations and maintenance throughout the life of the project (50-year design). Operation and maintenance activities will primarily consist of maintenance dredging and waterfowl management and is anticipated to cost approximately \$300,000 every five years. For more information, see www.orn.usace.army.mil/pao/Issues/drakescreek.

The National Tree Trust Helps with Riparian Restoration

The National Tree Trust was established in 1990 to mobilize volunteer groups, promote public awareness of trees and their benefits, provide grants, and unite civic and corporate institutions in support of local tree planting and education projects throughout the United States. National Tree Trust programs have inspired hundreds of community organizations to plant trees to enhance wildlife habitat and beautify public lands.

The National Tree Trust's Community Tree Planting program develops partnerships with municipalities and nonprofit organizations and provides them with bareroot tree seedlings of regionally appropriate tree species. The program requires that volunteer labor be used to plant and maintain tree seedlings.

Puget Sound Energy in Bremerton, Washington, in cooperation with the National Tree Trust, received more than 33,000 seedlings for use in a salmon-restoration project along Gorst Creek. The Gorst Creek Project consisted of transforming a 750-foot, concrete-lined, man-made channel into a natural riparian habitat. In the last state of the restoration project, Bremerton residents gladly joined together to plant the seedlings along the banks of the improved channel. Salmon benefit from improved spawning and rearing habitat in the stream, and area residents enjoy the aesthetically pleasing corridor as compared to the former concrete channel. The Gorst Creek Project has future plans to further extend the riparian area along the stream.

Grant applications for the next round of projects will be available from the National Tree Trust in January 2003. For more information, contact Beth Clark, National Tree Trust, 1120 G Street, NW, Suite 770, Washington, DC 20005; phone: 800-846-8733 x27; Internet: www.nationaltreetrust.org. Information for this article was gathered from the Fall 2002 issue of *Birdscapes*.

If you are part of an innovative restoration project that has had positive results, we'd like to hear from you. Please send a short description of your project to restorationupdate@tetrattech-ffx.com.

Funding for Restoration Projects

The Clean Ohio Revitalization Fund

In November 2000 Ohio voters approved the Clean Ohio Fund, a four-year, \$400 million program to preserve green space and farmland, improve outdoor recreation, and revitalize blighted neighborhoods by cleaning up and redeveloping polluted properties. The Ohio legislature created four competitive funding programs, each designed to carry out one of the original objectives of the Clean Ohio Fund: The Clean Ohio Green Space Conservation Program, Clean Ohio Agricultural Easement Purchase Program, Clean Ohio Trails Fund, and the Clean Ohio Revitalization Fund.

The Clean Ohio Revitalization Fund allows the state of Ohio the ability to issue more than \$150 million for preservation of green space. In 2002, several of these grants were awarded to conservation projects focusing on wetland and stream corridor restoration. Some 2002 grant awards include:

- The city of Columbus received \$478,100 to purchase 47 acres for its Parks and Recreation Department. The land will allow the city to preserve wetlands, streamside forests, and wildlife habitats along Clover Groff Ditch, a tributary of the Darby Creek.
- The Columbus Metropolitan Park Board will receive \$500,000 to buy 140 acres near Blacklick Creek, as well as \$250,000 for land near Big Darby Creek.
- Westerville will receive two grants. The first, for \$431,820, will buy 12 acres near the Mariners Cove Wetland for an extension of the Mariners Cove boardwalk and a link to a proposed bike trail. Westerville will also receive \$446,089 to buy 41 acres along Big Walnut Creek.
- New Albany will receive \$600,000 to purchase more than 5 acres near Rose Run Creek. The project will protect stream banks, preserve wildlife habitats, reduce erosion, and improve water quality.

Applications are currently available for the next round of Clean Ohio Revitalization Funds. For more information or to download an application, visit www.pwc.state.oh.us/clean_ohio.htm.

North American Wetlands Conservation Act: 2003 Neotropical Program Grants

The grant application for the fiscal year 2003 Neotropical Migratory Bird Conservation program is now available at <http://birdhabitat.fws.gov>. This program was established to emphasize the conservation of migratory bird populations and their related habitat. Funding priority will be given to projects from new grant applicants with new partners that ensure long-term conservation benefits and include upland habitat or riparian habitat restoration. The most important changes for this year's proposal process include (1) a cap of \$250,000, (2) more detailed review criteria, and (3) a new deadline (1/31/03). In addition, please note that paper applications will no longer be accepted.

Please send any news you have on funding mechanisms available to local community organizations to restorationupdate@tetrattech-ffx.com.

News and Announcements

Scientists Embark on New Riparian Zone Study

This past summer the U.S. Department of Agriculture, Forest Service Southern Research Station (SRS) scientists started work on a multidisciplinary project to develop a practical understanding of the structure and function of riparian zones. Riparian zones, the lands along streams and rivers, maintain water quality as well as the ecological health of waterside communities. Riparian zones filter sediments and nutrients, stabilize streambanks, provide habitat and food for stream organisms, and, by shading streams, moderate temperature. Riparian zones also provide habitat for moist-zone animals and plants and travel routes for others.

Determining the width of riparian zones is important for ecological management and planning, and has been a subject of considerable debate. Riparian zone width is often simply defined by the vegetation, since plants requiring the wet soils characteristic of riparian zones are usually different from those in the surrounding areas. Different widths may be needed, however, for other functions. The width needed to filter sediments, for example, may be very different from the width required for wildlife travel routes. Riparian zone width is also affected by topography, particularly in upland areas.

In the southern Appalachians, many riparian zones have been degraded or altered, resulting in reduced water quality and negative impacts on stream organisms. At this time, there are no easy methods to determine the widths needed to address multiple functions or to inform the process of restoring disturbed riparian areas.

A team of researchers involved in the southern Appalachians have started a new experimental program on riparian zone structure and function to establish the baselines needed by planners to restore or enhance degraded riparian zones. Researchers will collect data on the structure and function of four different riparian zone widths along headwater streams where adjacent upland forests have been harvested. The experiment will be repeated on three watersheds and on a control zone with no vegetation removed.

The first phase of the project will determine the functional width of the riparian zone by measuring key components and processes. These include vegetation composition and dynamics, wildlife habit, aquatic condition, keystone species, and carbon and nutrient interactions with streams. For the second phase, researchers will explore riparian zone response to different forest management options including harvest, rhododendron control, prescribed burning, fertilization, and planting.

The project includes collaborators from eight SRS research units, the University of Georgia, Clemson University, Virginia Tech, and the National Forest in North Carolina. For more information, contact Jim Vose at 828-524-2128, x114 or jvose@fs.fed.us. For the original press release see www.srs.fs.fed.us/about/newsrelease/nr_2002-07-24-riparian.htm.

Fisheries In Nine Coastal States Receive \$200,000 Boost From The FishAmerica Foundation

During the summer of 2002, nearly \$200,000 in grants were awarded to nine coastal states through a community-based fisheries habitat restoration program sponsored by the American Sportfishing Association's FishAmerica Foundation and the U.S. Department of Commerce's National Oceanic and Atmospheric Administration.

Striped bass, salmon, and shad are among the prized fisheries to benefit from 14 matching grants of up to \$30,000 awarded to community partners in Alaska, California, Florida, Maryland, Massachusetts, Oregon, Vermont, Virginia, and Washington. More than 40 partner groups and hundreds of volunteers will contribute 15,000 hours to these efforts to improve water quality, revegetate river shorelines and coastal wetlands, and improve fish migration pathways. Projects are part of larger statewide efforts to restore key watersheds and revive sportfisheries that are important to recreation, local commerce, and tourism. Some of the selected projects include:

Alaska. The Alaskan Youth Restoration Corps of Kenai will use \$12,500 to restore salmon and trout spawning habitat within the Chugach National Forest, part of a larger effort to restore 13 miles within the Kenai River watershed, a prized fishing destination. Three previous FishAmerica grants have supported this group in restoring more than 3,000 feet of streambank and revegetating 60 acres in the same watershed. In addition, the Copper River Watershed Project of Cordova will use nearly \$10,000 to restore salmon habitat in Eyak Lake, noted for its sockeye and coho. Lakeshore restoration is part of an effort to create an urban park with sportfishing access.

Florida. The Tampa Bay Chapter of the Florida Coastal Conservation Association will use nearly \$11,000 to restore fisheries habitat at Ballast Point Park, a popular spot for snook, redfish, sheepshead, and black drum fishing. Volunteers will remove a concrete sea wall to prevent further shoreline erosion and destruction of wetland spawning areas for these fish. They will also create an artificial reef along 200 feet of shoreline, and plant native wetland vegetation and mangroves.

Vermont. The Northeast Kingdom Conservation Service Corps of St. Johnsbury will use \$7,000 to restore salmon, rainbow, brook, and brown trout habitats on the Sleepers River, part of a larger effort to restore the Atlantic salmon migration routes in the Connecticut River. Shoreline areas on the Sleepers River will be stabilized and revegetated to help filter runoff and improve water quality for these fisheries.

Virginia. The Alexandria Seaport Foundation will use \$9,000 to restore a mile of tidal wetlands along the Potomac River to benefit striped bass, hickory shad, smallmouth bass, and perch. The group is working with the U.S. Fish and Wildlife Service's Schoolyard Habitat Program and local high school greenhouses to grow wetland plants for revegetation efforts and recruit volunteers to remove debris beforehand. In addition, the Northumberland Association for Progressive Stewardship of Heathsville will use \$2,250 to work with landowners to revegetate portions of the Yeocomico River, part of the Chesapeake Bay watershed, with native marsh grasses, benefitting striped bass, American shad, bluefish, croaker, and flounder. Another grant for \$30,000 is awarded to the James River Association of Richmond to support ongoing efforts to revive American Shad and striped bass runs. Shoreline revegetation efforts will stabilize streambanks and prevent sedimentation affecting water quality for these fisheries.

For information about the remaining projects, see www.asafishing.org/content/newsroom/newspr_boost.cfm or contact the FishAmerica Foundation at 703-519-9691 or e-mail fishamerica@asafishing.org.

Upcoming Conferences and Events

New Listings

Wetlands Stewardship: Changing Landscapes and Interdisciplinary Challenges

June 8–13, 2003

New Orleans, Louisiana

The 24th Annual Conference of the Society of Wetland Scientists will address interdisciplinary, innovative approaches and technologies that are currently being applied to sustain wetlands across diverse environments and spatial scales of the world. Conference symposia and workshops will highlight approaches to combine traditional and applied wetland sciences with ecological, physical, engineering, economic, and social sciences. For more information, visit www.sws.org/neworleans or contact Dr. Robert R. Twilley, Program Co-chair, Center for Ecology and Environmental Technology, University of Louisiana at Lafayette, PO Box 42451, Lafayette, LA 70504; e-mail: ceet@louisiana.edu; phone: 337-262-1776.

Coastal Zone 2003: Coastal Zone Management Through Time

July 13–17, 2003

Baltimore, Maryland

This bi-annual symposium hosted by the National Oceanic and Atmospheric Administration's Coastal Services Center attracts a wide variety of coastal management professionals. Four overarching themes—port and harbor management, regional land management, management responses to coastal hazards, and management of aquatic resources—will shape the agenda of this 5 day workshop. Discussions will include topics such as aquatic vegetation and wetlands, invasive species, floodplain management, and watershed planning. For general information on the conference, contact Gale Peek, Coastal Zone 03 conference manager at Gale.Peek@noaa.gov or by phone at 843-740-1231.

To post your restoration news and announcements, please send information to restorationupdate@tetrattech-ffx.com.

Restoration-Related Web Sites

www.shorelandmanagement.org

Minnesota Shoreland Management Resource Guide. This online information service is designed to provide easy access to information about sustainable shoreland practices to improve management of Minnesota's lakes and rivers. The Shoreland Guide offers an effective, low-cost means to reach local government and citizens who make the everyday decisions that impact our lakes and rivers. The Web site contains scientific and technical background, camera-ready quick and easy answers (FAQs), highlights of citizen action, and contact information for Minnesota counties. The site also provides access to new publications, as well as those that are out of print or difficult to find. *This site provides useful resource information and ideas for anyone interested in lakeshore restoration.*

www.blm.gov/riparian/data.htm

National Riparian Project Database. This site, developed as part of the Bureau of Land Management's Riparian Recovery Initiative, offers descriptions and photos of successful riparian restoration projects throughout the western United States. Although the project information was last updated in 1998, visitors to the site can still benefit from reading about the diversity of restoration techniques employed. *This site would be useful for someone looking for examples of successful riparian restoration projects.*

www.blm.gov/riparian/slided.htm

Bear Creek: A Riparian Improvement Example. This site features a step-by-step description of the riparian restoration and recovery process of Bear Creek in Oregon from 1977 through 1996. Each step is accompanied by a photograph. This site was developed as part of the Bureau of Land Management's Riparian Recovery Initiative. *This site provides readers with a look at the success of a riparian restoration project over the long-term.*

www.californiacoastline.org

California Coastal Records Project. The goal of this Web site is to create an aerial photographic survey of the California coast and update it on a periodic basis. The site can be used to document developments and changes in wetlands and other natural areas along California's coast. *This Web site would be useful for anyone seeking aerial photographs of wetlands along California's coast.*

www.werc.usgs.gov/fieldguide

Field Guide to the Reptiles and Amphibians of Coastal Southern California. The U.S. Geological Survey developed this field guide in 2001. It lists reptile and amphibian species of southern California, gives basic information about each species along with distinguishing characteristics and high quality color photos of each species. *This Web site provides a good pictorial directory of numerous reptile and amphibian species commonly found in wetland areas.*

www.swmlc.org/index.html

Southwest Michigan Land Conservancy. This Web site outlines the steps the Southwest Michigan Land Conservancy has taken to protect land important to wildlife and people. The conservancy has acquired and restored three preserves—Jeptha Lake Fen, Tobinabee Lake, and Hidden Marsh. *The Web*

site contains information on land protection tools used to establish these preserves, and would be useful to anyone seeking information on tools that can be used to protect wetland areas.

<http://mountain-prairie.fws.gov/pfw/ne/ne2a.htm>

Nebraska Partners for Fish and Wildlife Web Site. This site, hosted by the Fish and Wildlife Service Mountain-Prairie Region, gives an overview of their habitat restoration program. This site contains links to information on habitats of special concern, restoration strategies, and success stories. The pages highlighting completed restoration projects contain information on the work that was done and pictures that document the restoration process. *This Web site would be useful for anyone seeking information on how the Partners for Fish and Wildlife program can help them with a restoration project.*

www.wildlifemanagementinstitute.org/wmi/pages/main.html

The Wildlife Management Institute. The Wildlife Management Institute is a private, nonprofit, scientific and educational organization committed to the conservation, enhancement, and restoration of wildlife and wildlife habitats. This Web site outlines wildlife and habitat restoration work currently underway by the institute as well as information on how to order publications and brochures. *This Web site would be useful to anyone seeking assistance with wildlife management and associated restoration projects.*

www.state.ma.us/envir/mwrrp

Massachusetts Wetlands Restoration Program (MWRP). MWRP inventories wetlands restoration sites within watersheds and coastal regions, and facilitates the implementation of priority restoration projects through its GROWetlands (Groups Restoring Our Wetlands) Initiative. The Web site provides information on wetland restoration, restoration planning, and corporate partnerships. *This Web site would be a good resource for anyone seeking assistance with a restoration project, especially within Massachusetts.*

<http://tlhdwf7.dep.state.fl.us/fwric/search.asp>

Florida Wetland Restoration Information Center Funding Database. The information contained in this site was developed by the Florida Department of Environmental Protection for the specific purpose of providing a search engine for potential funding resources for wetland restoration projects within Florida. Multiple restoration-related federal funding sources are also included in this database. *This database would be useful for anyone looking for funding sources for restoration-related projects.*

Let us know about your restoration-related Web site. Please send relevant URLs to restorationupdate@tetrattech-ffx.com.

Information Resources

Riparian Fact Sheets

by The Bureau of Land Management's Riparian Recovery Initiative

The Riparian Recovery Initiative has developed two riparian fact sheets outlining basic information on riparian restoration. *What is a riparian area and how does it work?* and *What can we do to improve riparian areas?* contain text and pictures that provide basic information to help educate the layperson. To download these fact sheets, visit www.blm.gov/riparian/pdf.htm.

A Scientific Basis for the Prediction of Cumulative Watershed Effects

by The University of California Committee on Cumulative Watershed Effects (June 2001)

This report, prepared by a committee of experts that included faculty from the University of California, the University of Washington, and the University of Michigan, provides an assessment of the scientific state of knowledge about cumulative watershed effects. First, the authors propose a risk-based modeling approach to assess cumulative impacts since the threshold between impact and no-impact is not always discrete or measurable. Second, the authors describe and elaborate upon new modeling techniques which can be employed to achieve a better understanding of natural processes at larger scales. This avoids the problems inherent in treating natural processes on a case-by-case basis. Third, the authors suggest a demonstration project wherein researchers would show how new models could be adapted and applied to the circumstances discussed in this report. This document may be downloaded or viewed online at <http://danr.ucop.edu/wrc>.

If you'd like to publicize the availability of relevant information resources, please send information to restorationupdate@tetrattech-ffx.com.